WC 151

Date Feb. 11, 2003

TO:

Joel Berwick
U. S. Department of Energy (DOE)
Grand Junction Office
2597 B 3/4 Road
Grand Junction, CO 81503

This is an official notice to the DOE registering my objections to any plans being considered to move 13 million tons of contaminated uranium tailings from Grand County, Utah to East Carbon, Carbon County, Utah.

My concerns are as follows: We don't need any more contamination here.
1. We have enough already with the Cogeneration plant on one side + E.C.D.C. on the other.
2. We don't want even one ton of your contaminated uranium tailings from G. Co.
3. No more waste to fill the air we have to breath.
4. I've lived here 55 yrs. raised 7 children, we used to have lots of sweet clean air.
5. We don't want your waste here No No No.

Please enter these comments into your permanent project records.

Thank you.

Signed

Name Naomia Trujillo
Address 123-8th W. P.O. Box 28
City, State, Zip East Carbon, Utah

WC 152

Date Oct-11-03

TO:

Joel Berwick
U. S. Department of Energy (DOE)
Grand Junction Office
2597 B 3/4 Road
Grand Junction, CO 81503

This is an official notice to the DOE registering my objections to any plans being considered to move 13 million tons of contaminated uranium tailings from Grand County, Utah to East Carbon, Carbon County, Utah.

My concerns are as follows:

1. I think these tailings should remain in the Moab area -
2. We don't need all that stuff in our area -
3. ~~Blah~~ Besides it is a hazard to haul it up here on the highways,
4.
5.

Please enter these comments into your permanent project records.

Thank you.

Signed

Name Edith Christensen
Address 4606 Eagle Hill Dr.
City, State, Zip Sunnyside, Ut 84539

WC 153

Date 2/11/03

TO:

Joel Berwick
U. S. Department of Energy (DOE)
Grand Junction Office
2597 B 3/4 Road
Grand Junction, CO 81503

This is an official notice to the DOE registering my objections to any plans being considered to move 13 million tons of contaminated uranium tailings from Grand County, Utah to East Carbon, Carbon County, Utah.

My concerns are as follows:

1. Transporting spills / Dangers.
2. Seepage into the water supplies !!!
3. The contaminated waste should stay in the cities & states where it is produced!
4. We have our own problems with our coal mine tailings -- We live in a rural area & absolutely do not want this area to be ~~their~~ dump (garbage)
5. We are a peace loving people & do not want any area! nuclear waste her

Please enter these comments into your permanent project records.

Thank you.

Signed Annette Beckman

Name Annette Beckman
Address 251 S. 1600 E. #2630
City, State, Zip Price Ut 84501

WC 154

Date 2/11/03

TO:

Joel Berwick
U. S. Department of Energy (DOE)
Grand Junction Office
2597 B 3/4 Road
Grand Junction, CO 81503

This is an official notice to the DOE registering my objections to any plans being considered to move 13 million tons of contaminated uranium tailings from Grand County, Utah to East Carbon, Carbon County, Utah.

My concerns are as follows:

1. Carbon County will become a radioactive dumping ground.
2. Carbon County was promised no contaminated wastes.
3. Too few people with a small voice, against those with power and money.
4. Junk (radioactive, contaminated) to Carbon County opens the door for more and more waste from all over.
5. The tailings are a result of an industry that benefitted mosh. they should take care of their own byproducts.

Please enter these comments into your permanent project records.

Thank you.

Signed Patsy Richens

Name Patsy L. Richens
Address 867 No. 6th East
City, State, Zip Price Utah 84501

WC 155

Date 2/10/03

TO:

Joel Berwick
U. S. Department of Energy (DOE)
Grand Junction Office
2597 B 3/4 Road
Grand Junction, CO 81503

This is an official notice to the DOE registering my objections to any plans being considered to move 13 million tons of contaminated uranium tailings from Grand County, Utah to East Carbon, Carbon County, Utah.

My concerns are as follows:

1. CARBON COUNTY RECIEVES(ED) NO BENIFIT FROM THE TAILINGS, THEREFORE WE SHOULD NOT HAVE TO STORE IT.
2. THERE IS THE POTENTIAL TO CONTAMINATE SEVERAL OTHER WATER SYSTEMS.
3. POTENTIAL OF AN ACCIDENT DURING TRANSPORTATION.
4. ECDC IS NOT CERTIFIED TO HOUSE NUCLAR WASTE.
5. WHEN ECDC WAS ALLOWED TO COME TO TOWN, IT WAS UNDERSTOOD THAT THERE WOULD BE NO NUCLAR WASTE.

Please enter these comments into your permanent project records.

Thank you.

Signed

Name MIKE METZGER
Address 75 N 100 E
City, State, Zip PRICE UT 84501

WC 156

Date 2-8-03

TO:

Joel Berwick
U. S. Department of Energy (DOE)
Grand Junction Office
2597 B 3/4 Road
Grand Junction, CO 81503

This is an official notice to the DOE registering my objections to any plans being considered to move 13 million tons of contaminated uranium tailings from Grand County, Utah to East Carbon, Carbon County, Utah.

My concerns are as follows:

1. Health for our Children and the Older people
2. We dont need any more waste products in Carbon Co.
3. Dont need any contaminated dust in our Windy County
4. Accidents getting to and from destination.
5.

Please enter these comments into your permanent project records.

Thank you.

Signed

Name Lucille Dorrard
Address 210 E. 900 No.
City, State, Zip Price, Ut. 84501

WC 157

Date 2-8-03

TO:

Joel Berwick
U. S. Department of Energy (DOE)
Grand Junction Office
2597 B 3/4 Road
Grand Junction, CO 81503

This is an official notice to the DOE registering my objections to any plans being considered to move 13 million tons of contaminated uranium tailings from Grand County, Utah to East Carbon, Carbon County, Utah.

My concerns are as follows:

1. This site would be too close for the health of People.
2. This would control the land used now for Cows.
3. more land is ~~available~~ affordable than Carbon County.
4. Too much of this land would be traveled by people
5. Health reasons for people living in Carbon County.

Please enter these comments into your permanent project records.

Thank you.

Signed

Name Ray Howard
Address 210 E 9 m
City, State, Zip Price, Ut. 84501

WC 158

Date 2/10/03

TO:

Joel Berwick
U. S. Department of Energy (DOE)
Grand Junction Office
2597 B 3/4 Road
Grand Junction, CO 81503

This is an official notice to the DOE registering my objections to any plans being considered to move 13 million tons of contaminated uranium tailings from Grand County, Utah to East Carbon, Carbon County, Utah.

My concerns are as follows:

1. Why is East Carbon, Carbon County Utah being considered?
2. How radioactive is it?
3. Would the containers be covered at all times?
4.
5.

Please enter these comments into your permanent project records.

Thank you.

Signed

Name Tammy Uea
Address 1076 W 200 N
City, State, Zip Helper Ut 84526

WC 159

Date 2-11-03

TO:

Joel Berwick
U. S. Department of Energy (DOE)
Grand Junction Office
2597 B 3/4 Road
Grand Junction, CO 81503

This is an official notice to the DOE registering my objections to any plans being considered to move 13 million tons of contaminated uranium tailings from Grand County, Utah to East Carbon, Carbon County, Utah.

My concerns are as follows:

1. Water effects –
2. Air quality –
3.
4.
5.

Please enter these comments into your permanent project records.

Thank you.

Signed Will Jaimez

Name Will Jaimez
Address HC 35 Box 101
City, State, Zip Kenilworth UT 84529

WC 160

Date 2-10-03

TO:

Joel Berwick
U. S. Department of Energy (DOE)
Grand Junction Office
2597 B 3/4 Road
Grand Junction, CO 81503

This is an official notice to the DOE registering my objections to any plans being considered to move 13 million tons of contaminated uranium tailings from Grand County, Utah to East Carbon, Carbon County, Utah.

My concerns are as follows:

1. Besides the fact of the Dump accepting what it Does - the tailings would BE another contaminate
2. we would have to worry about - what would BE THE Long TERM EFFE
* would there be any EFFECT TO THE WATER SYSTEMS.
3. — would these Tailings be blown about when the
4. wind comes about? SE. Carbon has no trees to stop this from reaching other areas —
5. What about Asthma sufferers?

Please enter these comments into your permanent project records.

Thank you.

Signed Roxann Jaimez

Name Roxann Jaimez
Address HC35 Box 101
City, State, Zip Wenilworth Ut. 84529

WC 161

February 10, 2003

Mr. Joel Berwick
U.S. Department of Energy (DOE)
Grand Junction Office
2997 B 3/4 Road
Grand Junction, CO 81503

Re: Moab, Utah Uranium Mine Tailings

Dear Mr. Berwick:

I am writing to protest the movement of any radioactive waste (regardless of the level of intensity or composition) to the site in Carbon County, Utah known as ECDC and/or any other location in Carbon County.

In addition, I am giving written notice to you that the public notice regarding the DOE 'Scoping Meeting' held in East Carbon, Utah on the 28th of January 2003 was in my opinion, and that of many I have spoken to, obscure and totally inadequate. Especially when such an event would have a significant, long lasting and devastating impact on the county in which I reside. Given the deadline for the public to voice their concerns and/or opinions and be able to back them up with factual rather emotional responses this looks like a blatant attempt to hoodwink the people of Carbon County. Should a business, be it a bank, department store or publication be as negligent in notification/disclosure they would be held accountable.

I have researched as thoroughly as possible all information I can find which is pertinent to this situation. It is so overwhelming and voluminous that I have selected various points within one category to emphasize in this letter. However, you can be assured that I will go forward to all public and private citizens and organizations with the rest of the documented factual information I have collected to this point and all that I am able to find in the future.

Recovering and/or keeping the environment clean:

- A project is currently under way to take all irrigation water in Carbon County and move it into pipelines from dirt ditches and to further have all irrigation done by sprinkling systems to prevent the runoff of water containing the alkali leached from the soil into the Price River where the water contaminated with alkali then runs into other water flow systems and on into Mexico. The water lines are being put in place at this time. These lines are costing farmers and ranchers many thousands of dollars. How in good conscience can one cleanup be negated by another contamination?
- The Horse Canyon Mine area is currently in the process of being reclaimed. This is located approximately 10 miles from the ECDC site. With the current prevailing winds and dust storms we have here, the DOE site could and probably would contaminate Horse Canyon again.
- A co-generation plant was established in East Carbon to dispose of the waste left by years of coal mining in the area and now it appears that there is a desire to introduce a new contaminate.
- The rancher who operated the land and continues to have a lease for agricultural purposes on the land being used by ECDC for a dump, won 'Conservation Ranchers of the Year in 1991' and was presented this award by the Price River Soil Conservation District due to his "outstanding use and understanding of the soil". Why would anyone want this progress undone?
- There is water used on the ranch that is directly adjacent of the proposed dumpsite. Over the years the water from the springs on the Big Spring Ranch have been used for human consumption, agricultural purposes, piped to a site for the trains to use, piped to the culinary reservoir above the townsites of East Carbon, Dragerton and Sunnyside during a drought years to provide the citizens with drinking water. Even the American Indians used and were dependent on these springs

and the fresh water they provide as depicted in Indian writing on the nearby ranch. The water is currently being pumped as needed to a co-generation plant. Will the water be safe for use in the future?

- In a drought situation, such as this county has been in for the last several years, where will the water come from to keep the contaminated dust under containment?
- When the violent windstorms that come into the area occur, such as have in the past and do on a annual basis, blowing plastic bags and trash from the current dumpsite go all the way to Bruins Point. How will the contaminated radioactive dust be contained and who will contain it, and are they qualifed to do it for 1000 years? Winds are so strong they have uprooted trees in the nearby communities!
- And, most of all how can a dumpsite that was never ever going to take anything except non-hazardous incinerated community waste, as disclosed in public meetings, be considered in the Moab clean-up plans?

I have just touched one extremely area of negative impact. I respectfully submit to you that if your agency had taken adequate time to collect and evaluate all the pertinent data, the proposed site (ECDC) would never have been a consideration from the very beginning.

Sincerely,

Jeanne P. Marrs

Jeanne P. Marrs
Mother, Grandmother, Daughter, Wife, Business Owner and Concerned Citizen

CC: ECDC
City of East Carbon
City of Sunnyside
City of Price
City of Moab
City of Wellington
City of Helper
City of Columbia
All Utah Congressmen
All Utah Senators
Governor Leavitt's Office
DOE, Washington DC
US Dept. of Health and Welfare
Attorney Gen. of the State of Utah
Utah Dept. of Hazardous Waste

WC 162
I am writing this letter in regards to article in the Sun Advocate which indicated that the United States Department of Energy is preparing an environmental impact statement regarding the contaminated soils and ground water at the Moab uranium tailings site in Grand County.

As a citizen I would like to indicate that I am opposed to transferring the contaminated soils and water to the East Carbon Development Corporation (ECDC) site. The ECDC site is not licensed to receive radioactive materials. When the ECDC site was first developed I was assured by those involved that the site would not receive hazardous waste of any kind.

If you transfer these mill tailings to ECDC, all that you will be doing is moving the problem from one site to another as well as spreading the tailings from the original site to ECDC and contaminating a great deal on land and residences in between. You will also be opening up the possibility of having further radioactive hazardous materials coming in from other sources to ECDC of which the railroad tracks that carry the contaminants will go directly through many of our neighborhoods.

I see no reason to create two problem areas. I would suggest that the tailings be relocated to their origination site. I would ask that you take a serious look at the longterm effects of allowing the move of the tailings. I would implore you to prevent the move of the tailings to ECDC.

One of my top priorities as a citizen and voter is the protection of our environment for all current and future citizens. I urge you to protect the benefit we have of a non-radioactive area as well. Thank you for your time in this matter.

WC 163

We are pleased to be able to provide comments regarding the scope of the Environmental Impact Statement (EIS) for the Moab Project. We appreciated the Department of Energy holding public scoping meetings in our County and would ask that you consider holding future meetings in the County as the process continues. The County Commission would also ask that you provide future mailings and correspondence regarding the project to the Commission.

The County is very interested in having the Department of Energy look at the White Mesa mill as one of the off-site disposal alternatives, preferably by the slurry system but also by truck transportation. We believe that the White Mesa site offers some unique benefits to this project in that the Mill currently is licensed by NCR to process uranium-bearing materials and dispose of them on-site in lined ponds. The Mill has been in business for over 23 years. There are ample trained employees within the County to work at the facility. The removal of the tailings from the Moab site to the White Mesa Mill would also provide for one less final

site that custodial care would have to be provided as part of the Long-Term Surveiiiance and Maintenance Program.

San Juan County has been part of the Nation's uranium production and defense programs for many years. The results of these programs have provided both negative and positive benefits to the residents of the County, including the Native American residents.

The County is very interested in the potential of a slurry pipeline project that would deliver the tailings to White Mesa. It is our understanding that the pipeline could be placed in current corridors in which utilities such as electric lines and pipelines are situated and/or in rights-of way owned by the Utah Department of

Transportation. The pipeline could also provide long term solutions for both economic and social issues in this county in the provision of water resources.

For example, the slurry pipeline could be tested by providing water to reservoir locations in Grand and San Juan County at locations such as Ken's Lake, Loyds Lake and Recapture. At the conclusion of the project, the pipeline or the return line could be left in place providing water to locations through the county.

San Juan County is bordered by more water than any other county in the State of Utah (Colorado River, the San Juan River and Lake Powell) but is unable to use any of the water due to geographical and environmental concerns. The use of the slurry pipeline could provide a long term solution to future drought and growth concerns.

There is also a concern and need to provide education to the residents of the County concerning the dangers and risks of the project. We are pleased that the White Mesa Ute Tribe has agreed to participate as a cooperating agency in the process. The county's Native American communities have expressed their concerns about the long term health issues associated with uranium tailings. would ask that additional efforts be provided to assure that education programs are presented that are fair, accurate and unbiased so that these residents can make informed recommendations.

San Juan County would officially request that the County be consider as a cooperating agency. The County believes that this project has significant. issues that are relevant and of importance to the County. The City of Monticello, the City and Blanding, and the Navajo Utah Commission may also request to become a cooperating agency. If these entities make this request, the County Commission would ask that they be given favorable consideration.

We look forward to the upcoming process and want to be involved as much as possible in looking at the many issues that this project will involve.

WC 164

This letter comments on certain aspects of the proposed remediation of the Moab Uranium Mill Tailings Site.

I am adamantly opposed to the potential use of the White Mesa Mill (WMM) as a disposal site for the tailings. My opposition is based a number of reasons, including the unsuitability of the White Mesa Mill on the basis of geology and both preexisting and potential groundwater contamination issues, the available transportation options, public safety, time to completion, and overall project costs. I feel the White Mesa Mill should be eliminated from consideration as a possible disposal site not only for the Moab remediation project, but for any further toxic and radioactive waste disposal.

First, in terms of underlying geology, the White Mesa Mill is clearly an unacceptable choice as a disposal site. Mancos Shale is the strongly desired geological formation beneath any safe and feasible long term disposal site for the tailings. Mancos Shale functions as a naturally impermeable barrier to downward groundwater penetration, thus preventing contamination of any underlying aquifer. Mancos Shale is found immediately beneath both the Klondike Flats and Crescent Junction sites. There is no Mancos Shale underneath the WMM site and in fact no clear geological barrier beneath WMM and the major aquifer used by both the White Mesa Ute Reservation and Bluff. Both towns are down gradient from the WMM.

Additionally, the White Mesa Mill is very poorly situated in another sense, in that it is perched immediately above Westwater Canyon, a major drainage. Westwater Canyon flows into Cottonwood Canyon which in a mere fifteen miles passes through the town of Bluff and into the San Juan River. Contrast this to the Klondike Flats site which appears to be an internally draining basin, a condition which would further isolate the tailings and prevent groundwater contamination.

Moreover, there already exists a strong possibility of subsurface groundwater contamination today at the White Mesa Mill. Several years ago water samples taken from monitoring wells at WMM, as well as design and construction flaws of the settlement ponds, strongly suggested *existing* and *ongoing* groundwater contamination. This is an extremely serious environmental and public safety issue. Rather than deal with it in a responsible manner, the mill's owner, International Uranium Corporation (IUC) chose to act in a cavalier fashion, simply denying that anything was amiss, refusing to release subsequent test results from the monitoring wells despite repeated requests nor addressing the potential avenues for contamination.

Three modes of transportation are being considered for removal of the tailings from the Moab site: rail, trucking, and slurry pipeline. Only trucking and slurry are being considered for the WMM. Of the three options, rail is clearly the safest, most expedient and cost effective mode of transportation for this project.

An existing rail line runs immediately adjacent to the Moab tailings site. This rail line can be used to access any of the three disposal sites to the north: Klondike Flats, Crescent Junction, and the ECDC facility. At each of these sites, all that is needed to complete the transportation infrastructure is to build a short spur from the existing rail line. Rail is the one transportation option which is not available for the WMM.

A poor second to rail transport would be the use of a slurry pipeline to any of the four sites. Building a slurry pipeline to VVMM would be even more expensive and disruptive than a similar pipeline to either Klondike Flats and Crescent Junction and most likely even to the ECDC facility. First looking simply at distance, both Klondike Flats and Crescent Junction are significantly closer than WMM to the Moab. Moreover, the terrain between the Moab site and WMNI is far more rugged and challenging to pipeline construction and maintenance than to any of the other sites. A slurry line to WMM would have to overcome much greater changes in elevation, needing to climb almost 3000 ft before descending close to 1800 ft. And this is no simple linear rise and fall as there are sections of the route which are bisected by various deep canyons such as Devil's Canyon and Recapture Canyon. Because of terrain, there would be a significantly higher probability of pump and pipeline failure. In addition, the length and ruggedness of this route would translate into significant disruption of public travel south along Hwy 191 during pipeline construction.

The DOE has stated that existing easements along existing roads would be used to the greatest extent possible in the construction of a slurry line. Looking at the route between Moab and WMM it is clear that a slurry line would have to deviate from this optimum path to a greater extent than for any other site. First, the line would have to be routed around at least one if not three major towns. I can't believe it would be run down the main street of Moab, nor for that matter Monticello or Blanding. As the only site south of Moab, a slurry line to WMM would have to cross the Colorado River and run for several miles to the west of Moab, at times through recognized wetlands, before it could actually be tied into the easement on Hwy 191 south of town. From there, given the rugged nature of the terrain, with canyons, exposed bedrock, tight curves with little clearance, there will certainly be areas where it is unfeasible to route the pipeline within the Hwy 191 easement. Any deviation from the easement would necessitate new survey work to identify, among other things, existing cultural resources, both historic and prehistoric, with further work being necessary to document any identified cultural resource sites prior to pipeline completion.

Truck transport is the least desirable option. The sheer quantity of tailings at the Moab Mill Site, over 130 acres, would require tens of thousands of truck loads to any of the sites. Once again, the distance, ruggedness and the presence of three major towns en route would make trucking a particularly disruptive and dangerous option for transport to the WMM.

Also, I would like to address the fallacy of one of the alleged benefits of bringing the tailings to the White Mesa Mill; that is, the possible extraction of "valuable" constituents. The word "valuable" is a relative term as there is absolutely no doubt that the value of any of the extracted constituents from the tailings, be it uranium, radium, or whatever, would be infinitesimally small and pale in comparison to the overall cost of processing the estimated 130 acres of tailings and additional fill from the Moab site. In point of fact, the Department of Environmental Quality of the State of Utah has characterized similar reprocessing projects by the WMM as "sham disposal." Furthermore, it would take years for Wto process that quantity of material, further delaying the completion of the project. Thus, for reasons of both excessive cost and time, the alleged benefit of processing the tailings at the WMM is simply an illusion and should not be seen as a possible reason for bringing the tailings to WMM.

In conclusion, there are numerous why reasons the White Mesa Mill is ill-suited as a disposal site for the Moab tailings and therefore should be eliminated as a potential site for this project. Thank you for the opportunity to voice my concern.

WC 165

The Department of Energy (DOE) should expand the scope of the Moab Environmental Impact Statements (EIS) to include the possibility for Grand County to own and/or direct operations of the cleanup area and/or disposal site. Following project completion, the disposal site could transfer to the DOE.

Additionally, the DOE should expand the list of off-site locations in the Moab EIS to include the area near the Grand County landfill.

As part of the Moab EIS, the DOE should also evaluate rail access to that area from the rail line located at the south end of the airport to the landfill site. By doing so, Highway 191 would not be affected and there would be need for an underpass.

WC 166

On behalf of the Grand County Council I am writing this letter to express the opinions of the Grand County Council regarding the Atlas Tailings Environmental Impact Statement for remediation of the site and vicinity properties.

The Grand County Council has always advocated for the removal of the tailings and clean up of the groundwater contamination. Not only do we want the tailings moved, but we want the tailings moved to the Klondike Flats site. The Klondike site is the most practical location because of distance, safety, cost, as well as an economic benefit to Grand County.

Our concerns with the other site locations be considered are: (1) in the vicinity of the Cresent Junction site Williams Pipeline is considering constructing a tank

station (2) the main concern with the **EDCDC** site is the distance that the tailings would have to be transported and, (3) we strongly oppose the White Mesa Mill site due to the waste being hauled through the City of Moab as well as the need to construct slurry lines for 85 miles from Moab to the mill.

WC 167

The Department of Energy (DOI;) should expand the scope of the Moab Environmental Impact Statement (EIS) to include the possibility for Grand County to own and/or direct operations of the cleanup area and/or disposal site. Following project completion, the disposal site could transfer to the DOE.

Additionally, the DOE should expand the list of off-site locations in the Moab EIS to include the area near the Grand County landfill.

As part of the Moab EIS, the DOE should also evaluate rail access to that area from the rail line located east of that location, including access by means of construction of a rail underpass of US Highway 191, east of that location.

WC 168

First off, I would like to declare that I am writing this letter of my own free will and choice and at my own expense and on my own time. I make this statement because of a recent comment in the local paper, which states that the employees of the mill that spoke in the Public Meetings were paid to do so.

My feelings on are very simple. I do not believe that the Atlas Tailings and or any of its leach agents are having a negative impact on the 25 million people in California that use water from the Colorado River. I do not believe that the endangered fish in the Colorado River are any more or any less endangered because of the Atlas Tailings. And I do not believe that my sister, her family or the other good citizens of Moab are at risk because of the radon gas emissions from the "Toxic Pile". So why move the tails?

We will not move the tails because of scientific fact or environmental urgency. The tailings will be moved because it is politically the popular choice to make. So where is the politically popular place to move the tailings? That place does not exist.

I have not studied all the options with enough depth to list the pros and cons of each site. There are a couple facts that I am sure o£ There is a facility that is already in place to handle this type of material. It has a twenty-year history of safe and competent handling of radioactive materials. It has twenty years of data to back up its lack of negative impact on the environment. There is a trained staff on site with experience and training prepared to handle radioactive materials. And by bringing the Atlas Tailings to the White Mesa Mill, another potential DOE monitored site will not be created.

Bring the Atlas Pile the White Mesa Mill. Yes I work at the mill. Does this taint my opinion? Yes. But it also has given me the knowledge to know that radon emissions from the mill do not and will not harm the good people that live on the Ute Tribe's Land Grant or will it or has it harmed the Navajo People that live on the near by Mesas. I also know that the ground water for those people and our friends at Bluff is not in jeopardy because of the activities of at the Mill. And as for the harm that will come to the school children that pass by each day, well as grandpa would say," BULL S "

I am in favor of bringing the Atlas Tailings to the White Mesa Mill.

WC 169

These are my comments regarding remediation of the Moab uranium mill tailings. Please place me on the mailing list.

I live in San Juan County and oppose further shipment of toxic wastes to the White Mesa Mill operated by the International Uranium Corporation. The place is being turned into a waste dump, something it was never planned to be and is ill-equiped to support. The public has a right to know about the safety and environmental planning of the mills and its future use. If it has problems containing nuclear wastes now, it will have huge problems if it becomes disposal site for the Moab tailings. Of particular concern are the water resources upon which we all depend. How long before the wastes begin to appear in area springs and even kitchen faucets?

The notion of using our most precious Colorado River water to slurry wastes up to White Mesa is ludicrous on its face. The cost of constructing the massive infrastructure of a pipeline would dwarf the expense of capping or moving the wastes by truck or train to a more suitable location. If the only advantage of the White Mesa site is lack of powerful opposition in an impovershed corner of Utah, that is the worst of all justifications.

WC 170

Comments regarding Moab Project EIS

We are certain that the recommendations by the National Academy of Sciences are in full consideration by the DOE. We ask that the results be well documented, published by the DOE and made available to all interested parties. In addition we have documented several other concerns that we would like the DOE to consider. Our concerns are based on information provided at the EIS meeting and further formulated as a result of the NAS report. We realize that the purpose of the EIS process is to research the NAS recommendations and we appreciate the opportunity to draw your attention to issues of concern to the general public. Excerpts from the NAS letter report June 11, 2002 are reprinted here for convenience and as a means of highlighting some of our concerns.

The Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 transferred ownership of, and responsibility for, the Moab Site from the trustee of the bankrupt owner to the U.S. Department of Energy (DOE).

The Act also required DOE to ask the National Academy of Sciences to provide technical advice and recommendations to assist DOE in objectively evaluating costs, benefits, and risks associated with remediation alternatives for the Moab Site, including removal or treatment of radioactive or other hazardous materials at the site, ground water restoration, and long-term management of residual contaminant's.

The committee concludes that a closure path for the Moab Site is not ripe for decision because:

a) the pile, the Moab Site, and possible sites for a relocated disposal cell have not been characterized adequately;

b) the options for implementing the two primary remediation alternatives have not all been identified or sufficiently well defined;

c) the risks, costs, and benefits of the major alternatives have not been adequately characterized and estimated; and

d) the long-term-management implications for each option have not been described.

In order to understand the risks associated with the primary remediation alternatives, one must characterize the pile and any sites involved. This has not been done adequately.

"No Action Alternative" Not an alternative in the interest of health and environmental safety.

"On Site Disposal Alternative" -Not an adequate alternative unless the ground water contamination and the resulting Colorado River contamination is eliminated as one of the mounting health concerns. If the contaminated ground water were eliminated, along with the Moab Wash and the Colorado River which replenishes it, the "On Site Alternative" might become an alternative.

"Off site Alternatives" -Klondike Flats is the preferred site, however there are water sources that appear on the map provided by the DOE that appear to run in the area. These washes eventually feed into the Colorado River therefore further information is needed.

Cresent Junction -A proposed Tank Station may conflict and this site appears to be extremely close to the Highway 70.

White Mesa Mill -Is already a potential, future problem that the DOE may have to deal with. The Ute Nation claims to have a number of health related problems from what they believe is associated with contamination from the White Mesa Mill. The distance of 85 miles through three cities over rough landscape should prohibit further consideration. The fact that the Mill is also accepting waste from around the world makes this site an extremely poor alternative.

EDCDC Potentially a reasonable choice. The distance is a consideration but with further research this could be reasonable alternative.

SITE ALTERNATIVES

Comments regarding Moab Project EIS

Other considerations that the committee believes should be factored into a good decision process at Moab are local, regional, and national interests.

For example, DOE has a responsibility to select an alternative that meets the EPA standards, which demand the best reasonably achievable assurance of satisfactory performance for up to 1000 years.

III Characterizing the primary remediation alternatives

In addition to quantifiable and non-quantifiable economic considerations, there are also significant uncertainties in the risks to human health (both public and worker) and the environment of alternative courses of action, as well as differences in the social value ascribed to the alternatives under consideration.

V Understanding interactions between water and the pile, and designing a cleanup plan for contaminated ground water.

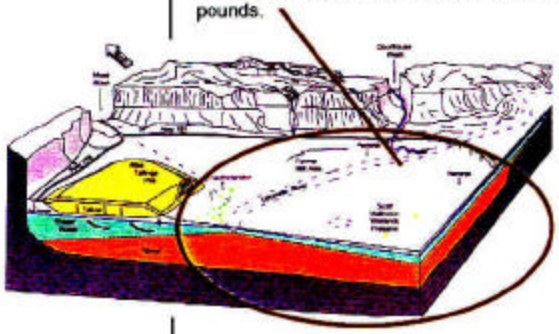
Recommendation: DOE should critically examine important assumptions and conclusions in its analysis, assess the probabilities that they might be invalid over the relevant time frames, and assess the resulting risks.

Would engineered barriers on the exterior of the pile prevent significant infiltration of water, either from precipitation or from flooding by the Colorado River, and thus prevent further contamination of ground water?

Infiltration is potentially a problem because it could carry more contamination to the ground water [U.S. NRC 1999]. For the stabilize-in-place alternative, if substantial new ground-water contamination were introduced, then cleanup of the site would not have a clear end within the regulatory time frame of 100 years for ground-water remediation, and beyond.

Infiltration might occur via two paths: through the cover and through the bottom of the pile. If the cover of the pile is compromised by erosion, desiccation or differential settling and faulting, or active removal.

★ Thus, recharge rates of water infiltrating (or draining) through the pile could be substantially larger than now estimated. Impacts of such increases on ground water, and river-water quality in the case of the stabilize-in-place alternative, should be evaluated for the types of contaminant's that contribute to ground-water contamination at the site, including inorganic compounds (ammonia, nitrate, sulfate, and dissolved salts), radionuclides, trace metals, and organic compounds.



- ★ The DOE has not adequately evaluated or documented all contaminates in the groundwater.
- ★ No information regarding any contaminant's have been provided for areas under the river or under the wetlands south of the site.
- ★ No current information for contaminates which are currently leaching into the river or their current effect on the endangered species.

All which were recommended by the NAS Report. (See tables next page)

D Would loss of even a substantial portion of the pile into the Colorado River produce only small and transitory consequences downstream?

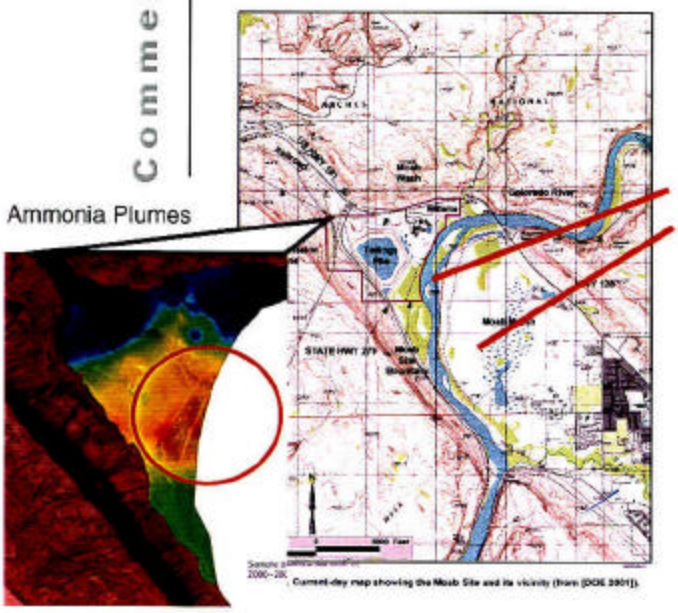
Analysis of losses of tailings into the Colorado River should more closely examine the consequences of radioactive materials reconcentrating downstream by sedimentation processes, resulting in exposures to humans.

Comments regarding Moab Project EIS

River-water quality should be evaluated for contaminant's from the site, including inorganic compounds (ammonia, nitrate, sulfate, and dissolved salts), radionuclides, trace metals, and organic compounds.

The committee found no calculation of the extent of leaching of contaminant's into new water (such as river water) infiltrating the pile, and partition coefficients (Kds) may not have been measured or estimated for the tailings themselves. Rather, it appears that the contaminant flux out of the pile was estimated based on seepage (water) fluxes and the average chemistry of tailings' pore fluids [SMI 2001].

No information was presented for consideration through the EIS process to date. This information is critical to understanding the potential risks associated with any plan for remediation.



In the tables, provided by the DOE, the ground water beneath the river and the wetlands to the south, have been evaluated.

One would assume that if you continue the levels of contamination to the ground water under the river and into the wetland, the level of contamination might increase. Dilution by constant leaching into the river and being carried downstream is not a acceptable resolution.

Ecological issues

There are potential ecological impacts of the pile, in addition to those on threatened and endangered species. The wetlands preserve across the river from the site is regionally significant habitat, and is protected from development.

Modeled plumes from the site were shown to travel deeply into the ground water beneath the river, and to surface at varying locations.

If such plumes exist then their impacts on the wetlands should be assessed. Monitoring wells and surficial presence of contaminant's in the preserve would establish possible influence.

Sampling of potential receptor species from different trophic levels for the presence of key contaminant's may also be appropriate.

During flooding stages, there is a continuous sheet of water from the pile toe through the wooded wetlands to the east. An understanding of transport of potential contaminant's, including sediments, across the river during these events is appropriate and essential.

Prior to any removal alternative we must understand the amount and the effects of the current contaminates leaching into the river, (estimated at 16,000 to 110,000 gallons a day)

No analysis has been provided for analysis of the potential effects of probable increase of contaminant's leaching into the river once the tailings are disturbed.

Comments regarding Moab Project EIS

The conclusion that there is low potential for lateral migration appears to be overly optimistic in view of available evidence and scientific understanding of river hydraulic processes. Lateral movement of the river channel away from and towards the pile has been observed since this stretch of the Colorado River was first surveyed for possible dams, in 1944.

Although the river entry and exit points to the valley are pinned by bedrock portals, within the valley the river flows across an alluvial bed. The general behavior of alluvial-bed rivers is well understood—the channels meander and, over time, points of lateral accretion become points of erosion. The bed of alluvium extends across the site and underlies the entire pile. Consequently, the present-day behavior of a river channel along a particular reach is not necessarily a good predictor of future behavior.

Remedial Action at the Moab Site—Now and for the Long Term

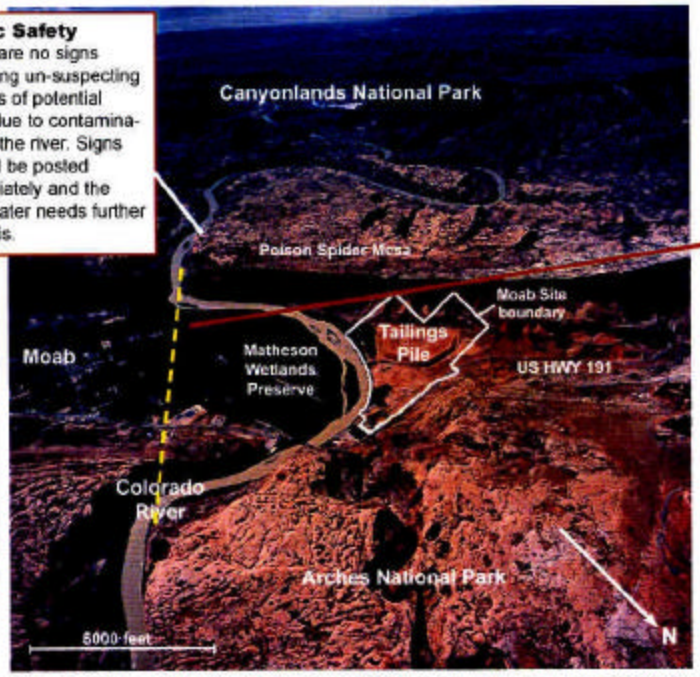


Figure 3. Oblique aerial photograph (courtesy of DOE). Markings in white were added by the committee. Directions, distances, and boundaries are approximate, and the distance scale corresponds roughly to the location of the pile in the picture.

Public Safety
There are no signs informing un-suspecting families of potential harm due to contamination in the river. Signs Should be posted immediately and the river water needs further analysis.

Extensive study regarding the river water contamination should be done.

A n analysis of the probable increase of contaminates leaching into the river during remediation must be considered.

DOE needs to protect the drinking water which supplies 25 million people downstream. Serious consideration should be given to re-routing a section of the river, in a concrete canal, prior to any remediation alternative. Additionally, if The Moab Wash could be contained and directed, the two sources, (Colorado River and the Moab wash) which feed the ground water would be eliminated.

Such a plan could potentially make the "On Site Alternative" a possible alternative, and groundwater treatment a possibility.

The proposed construction widening Highway 191 was mentioned but not elaborated on by DOE.
What effect will the construction have on the tailings which butt up to the highway at its north side?

Candidate sites and modes of transporting the tailings for the relocate alternative have not been examined in any substantial detail. As the alternative of relocating the pile is developed, an array of questions regarding the site for the disposal cell will also have to be examined in detail. Additionally, the probabilities and consequences of failures under each of the major alternatives will need to be considered.

* Referenced material available:

(DOE) Department of Energy
(Full EIS presentation available)

(NSA) National Academy of Sciences
(Full Report available)

*For more information www.coloradoriverfoundation.org

WC 171

11 February 2003

Joel Berwick, Project Manager
U.S. Department of Energy
Grand Junction Office
2597 B 3/4 Road, Grand Junction, CO 81503

Re: Comments of Draft Moab Project EIS Process.

Dear Mr Berwick:

I appreciate this opportunity to comment on the proposed scope of the Moab Project EIS Process. I will keep my comments limited to the DOE's Letter Report of June, 2002 entitled "Migration Potential of the Colorado River Channel Adjacent to the Moab Project Site." As I asked the NRC before, so I will ask the DOE. Why isn't the effect of the tamarisk migration into this reach of the Colorado river being taken into account in determining the potential for lateral migration of the river? The DOE's own historical analysis illustrates that since the tamarisk have colonized this reach of the river, the river has migrated North, towards the tailings pile. As tamarisk is a recent and substantial impact on the river system, why isn't its current and potential impacts on this Colorado River section being taken into account by the DOE?

Below is a photo of an abandoned discharge pipe used by the former Atlas Mill. In March of 1977 two Atlas employees watched as "blue stuff" was released from this pipe into the Colorado River. In March, 1977 only two feet of the pipe extended beyond the bank. The picture below was taken in 1998 showing approximately 40 feet of exposed pipe. This empirical evidence indicates that 40 feet of the Colorado River's North bank has been eroded away in the past 20 years at what is approximately Cross Section 5 of the 1994 Mussetter report. Given the recent, time frame of the invasion of tamarisk, how can the DOE now conclude that "Current river morphology indicates that the Colorado River Channel is moderately stable to stable." without accounting for tamarisk's current and future impacts?

What the NRC refused to address was how and why this current process of North bank erosion, was going to change. North bank erosion has to stop and north bank aggradation has to begin to support the NRC's previous and the DOE's present supposition that the Colorado River is migrating to the south. Current empirical data clearly demonstrate that the South bank of the river slopes into the river, that it is entirely colonized by tamarisk and that it is aggrading. The DOE's own historical photos document clearly this colonization and its subsequent strangulation of any channels on the South side of the river. Conversely, the North bank of the Colorado river is a cut bank in which few if any tamarisk are able to root on the river bank, as evidenced in the above photo. And these tamarisk are temporal as they fall down from the flood plain after being under cut by the river only to be transported down stream at a later date.

Regarding the last paragraph of page 4 of the DOE's Letter Report on lateral migration where the DOE cites a surface seismic geophysics study by Cooksley in 1995. The DOE paper references indicate that basin-fill deposits are 30 feet beneath the North side of the tailings pile and 406 feet on the south side of the tailings pile. The DOE then cites a Woodward-Clyde paper that concludes that the only process that can cause this finding is subsidence. The DOE then goes on to find that "the effect of salt dissolution on the alignment and migration potential of the river seems to be mitigated by continued sediment aggradation." The DOE cites that this process "has continued from the Pleistocene... up to today. There is no reason to conclude that it will not continue into the future." As the tailings pile is now part of that sediment aggradation, and that the DOE has clearly demonstrated that it is differentially situated over the subsidence zone as indicated by the Cooksley report, isn't the tailings pile also going to differentially subside into the foreseeable future? Whether or not the river migrates up to the pile, wouldn't the DOE agree that differential subsidence of the tailings pile into the foreseeable future will be detrimental to radon covers and complicate ground water protection measures?

It is also intriguing to see what the DOE used as reference and what was not. For instance, why wasn't the Corps of Engineers letter report of Nov 7, 1997 (enclosed) cited as well as the NRC's February 28, 1998 Supplemental Report to the Final FTER? Clearly, these reports shed pertinent information on the issue of lateral migration of the Colorado river, yet neither was incorporated in the DOE's letter report of 2002. In addition, I would like to submit a letter from Dr. William Graf, a leading fluvial geomorphologist well versed and published in the research of Colorado plateau streams who has thoughts counter to the Mussetter report amongst other cited by the DOE.

In conclusion, given that the DOE has not addressed the issue of the recent and significant impact of migrating tamarisk in this reach of the Colorado river, I would disagree with the DOE findings that the Colorado river alignment is moderately stable to stable in this reach. On the contrary, empirical evidence more than suggests that the river is migrating towards the pile at an average rate of 2 feet per year. I would appreciate a response from the DOE addressing this concern, something the NRC never was able to do.

Sincerely,

Peter Haney

Peter Haney
1991 Cedar Hills Dr
Moab, Ut 84532

WC 172

What were the factual and legal bases considered by U.S. Department of Energy (DOE) staff in making a determination that the National Environmental Protection Act (NEPA) proceeding ("scoping") held in Moab, Grand County, Utah, on January 22, 2003, would be an off-the-record federal proceeding (see 67 Fed. Reg. 77969-77973 and criteria cited therein)?

Where, by law, is the lead agency DOE staff (or the Secretary of Energy, for that matter) excused from inviting a local government entity (Grand County, Utah) to be a "cooperating agency?" See 40 C.F.R. Part 1501 (entitled "NEPA and Agency Planning") and, particularly, see 40 C.F.R. 1501.7(a)(1) (entitled "Scoping"). And further, see 40 C.F.R. Part 1507 (entitled "Agency Compliance") and 40 C.F.R. 1507.3(c) (entitled "Agency Procedures"). See also attached letter from Donna Bergman-Tabbert, Manager, DOE, to Myron Fliegel, Project Manager, Nuclear Regulatory Commission.

WC 173

Date 08 Feb. 2003

TO:

Joel Berwick
U. S. Department of Energy (DOE)
Grand Junction Office
2597 B 3/4 Road
Grand Junction, CO 81503

This is an official notice to the DOE registering my objections to any plans being considered to move 13 million tons of contaminated uranium tailings from Grand County, Utah to East Carbon, Carbon County, Utah.

My concerns are as follows:

1. Danger to our health. My husband worked in uranium industry and paid dearly with his health.
2. Contamination of ground water
3. Impact on our air
4. Hauling it over the highway = air quality diminished; impact on traffic; danger of wrecks.
5. Maintenance of landfill site not guaranteed. Please put these tailings closer to site and away from people!

Please enter these comments into your permanent project records.

Thank you.

Signed Anna Smith

Name Anna Smith
Address Box 492
City, State, Zip E. Carbon Utah 84520

WC 174

Firstly, I compliment you and your team for putting on a good presentation at the meeting I attended in Moab last month. It was very thorough and, upon reflection of the diversity of comments made, I admire your patience and understanding.

Secondly, I appreciate you publicizing on the internet the `core values' you intend to use in fulfilling this Public Participation Plan, particularly "Accuracy - commitment to the truth." What this means to me is that DOE must provide the public with an unbiased view of the truth, a balanced view of all of the facts. To pick just one example of what I am trying to say: I could not help but think about this when some gentleman from San Diego stood up to talk. I thought surely this guy does not believe that the Moab Tailings Pile is causing a problem with his water supply in San Diego!

I was the Atlas Project Engineer responsible for completing the interim covering of the pile and for decommisioning the equipment and cleaning up the site in 1995-97. I refer you to my article, published on this matter in the August/September 1998 issue of The Canyon Country Zephyr. My thoughts, based upon measured facts, have not changed since writing that article and I include it as part of my comments here in this submission to you Sir.

For instance, we did a statistical analysis comparing upstream and downstream river water constituents. The differences were statistically insignificant; one could not distinguish any difference from upstream and downstream from normal river back ground fluctuations. Therefore, why the people in San Diego should be all fired up about their water quality because of the pile's location is beyond common sense, or being truthful. This is only one example of the sheer nonsense that is involved when such projects are taken over by the government. It is DOE's resposibility to educate the public on such things and to eliminate them from further consideration as soon as possible.

I was glad to hear Don Metzler (your ground water expert) state that the area directly under the pile was a vadose zone. I had always thought this was the case, but never had the funds or the time to prove it. What this fact indicates is that from a ground water pollution standpoint there is no justification to re-locate this tailings pile because nothing can be achieved by doing so! The additional cost will be money down the drain, so to speak... and the ultimate payer, the taxpayer, should know about this fact.

After following this tailings issue for ten years now I am more convinced than ever that the primary reason our local politicians want the pile moved is to provide some decent paying jobs for Grand County residents. If this is the case, our taxpayers should know about it, all of it, that this is one of the main reasons they voted for the pile to be moved - "Accuracy -commitment to the truth!" Also,

is anyone from Moab benefiting from jobs on the work you are presently doing? I am not aware of any County residents benefiting from such work. If this is the case, do our local politicians know about the lack of benefit yet provided for our local people? I sometimes wonder who is kidding who on these issues, because here I am still trying to get work on the Moab Project with no success, and I probably have as much overall knowledge and experience on it as any of the `outsiders' you bring in!

During my time working for Atlas I did a survey of hundreds of people to find out what their reaction was to moving the pile, or reclaiming it in place. 95% were in favor of in-place reclamation and getting the job over and done with; for the most part, they were sick and tired of the non-stop arguing. That was in 1995 for which I have the back up information, but I'm not sure if the same is the case today. I also have the back up on my draw down data provided for the Zephyr article in detailed Excel work sheets.

I noticed that Loren Morton (Utah State's Hydrogeologist) emphased the view that the pile should once and for all be re-located on intructions from Dianne Nielson, DEQ's Executive Director. If this ends up being the case, due consideration should be given to current NRC licensees such as Uranium International for many reasons. However, I feel unqualified to comment on this because I do not have practical knowledge of long (78 miles!) abrasive material-carrying slurry pipelines.

In last month's meeting it was apparent that you may be lacking facts as to what is buried in the tailings pile. I spoke with one of your representatives about this after the meeting, and thus attach a copy of my final report to Atlas on the decommissioning work. It shows exactly where all of the main items were buried during my tenure on the job. I hope it helps. If I can be of further assistance, let me know.

WC 175

Pursuant to Section 309 of the Clean Air Act and the National Environmental Policy Act (NEPA), EPA offers the following comments for your consideration as DOE prepares the EIS for the Moab Project. The Moab Project Site is a former uranium-ore processing facility operated in the past under Title II of UMTRCA. In October 2000, national legislation gave DOE the responsibility for remediation of the Moab Project Site in accordance with Title I of UMTRCA. In 1999, prior to the transfer of the Moab site to DOE, the Nuclear Regulatory Commission completed its Final EIS related to the reclamation of these uranium mill tailings at Moab, Utah, which principally considered surface remediation and a cap-in-place.

According to the Notice of Intent to prepare this **EIS, DOE** plans to use information from the prior EIS prepared by the Nuclear Regulatory Commission (NRC). We certainly concur that DOE should use applicable information from the NRC EIS as appropriate in preparing this EIS since NRC's prior effort established an assessment of existing environmental conditions at the site, and to a great extent, many of the issues regarding the alternative of cap-in-place.

As part of the evaluation of alternatives, DOE plans to consider both an on-site and off-site remediation and disposal of tailings and contaminated soils. Ofd site disposal alternatives currently include five sites in Utah: 1) Klondike Flats, near Moab; 2) Crescent Junction, near the town of Crescent Junction and about 20 miles east of the town of Green River; 3) the White Mesa Mill near the town of Blanding; 4) the East Carbon Development Corporation (ECDC) site, near East Carbon, Utah, and 5) the Green River site operated by UMETCO. The transportation alternatives are truck-haul on existing roads, rail haul (with the exception of the White Mesa site which does not have an existing rail line) and/or slurry pipeline with return of the contaminated process water to the Moab Project Site.

The National Academy of Sciences (NAS) provided assistance to DOE in evaluating costs, benefits, and risks associated with remediation of the Moab project site. DOE has completed a preliminary draft Plan for Remediation that evaluated cap-in place and an unspecified, or generic, off-site relocation alternative. We are pleased to learn that DOE does not intend to finalize the Plan for Remediation, but instead will use the EIS process to support its decision making for the remediation of the Moab Site. In that manner, the public and concerned stakeholders can contribute to the EIS process knowing it will later become the basis for DOE's final decision for the site.

<u>EPA as a cooperating agency</u>

EPA has promulgated pursuant to the Clean Air Act the National Emission Standards for Hazardous Air Pollutants (NESHAPS) for radionuclides other than radon from Department of Energy facilities codified at 40 CFR 61 Subpart H. Further, pursuant to UMTRCA Section 108, EPA has promulgated the Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings codified at 40 CFR 192. DOE will need to comply with these requirements for the proposed remediation at the Moab Project Site. EPA maintains special expertise in this matter, and therefore, would be pleased to consider a request to become a cooperating agency for this effort. Should EPA become a cooperating agency, then DOE and EPA would develop a memorandum of understanding specifying EPA's roles and responsibilities for preparation of this EIS.

<u>Evaluation of the of site disposal alternatives</u>

The proposed off-site location of relocating the Moab tailings to the White Mesa Mill site may be more challenging to adequately characterize because it has a complicated history regarding its use as an NRC-licensed uranium mill. There are potential long-term impacts from continued operation of the mill bringing in alternate feed sources. For example,

NRC has amended the facilities license to accept waste from uranium materials reprocessing, originating from sites that have been remediated by the State of California and EPA as prior Superfund sites. Because of the special interests of the nearby community of White Mesa on the Ute Mountain Ute Reservation, additional assistance in understanding the environmental impacts to that community will be warranted. Under Executive Order 12898, federal agencies are to ensure that the environmental or health effects on minority and low-income communities receive special attention. In addition, pursuant to Executive Order 13084, federal agencies are to consult with Tribes on actions that significantly or uniquely effect their communities. EPA has several ongoing communication efforts with the community at White Mesa regarding the operation of the mill and would be able to assist DOE in its efforts to consult with the tribe of the potential impacts of this alternative of site remediation location.

It was unclear in the scoping process why the Envirocare site in Clive, Utah had been deleted from consideration. It does have the advantage of being a co-located site. Furthermore, it is EPA's understanding (based on our experience with the decision regarding the disposition of the tailings at the Monticello Mill Tailings site) that Envirocare had indicated that the company was considering a repository site in the Crescent Junction area. Has Envirocare come forward with a proposal for disposal either at Clive or at an alternate Crescent Junction site? What steps has DOE undertaken to solicit a proposal from Envirocare?

Ground water analysis suggestions esg dons

Ground-water modeling performed in support of the assessment of ground water remedial options needs to consider groundwater-surface water interactions. Ground-water and surface water interactions appear to be poorly understood. For example, discharge to the river as a function of river stage needs to be evaluated. Any potential discharge to the wetlands also needs to be evaluated. Well hydrographs coupled with river flow (and any precipitation events) should be plotted for wells adjacent to the river. Micro-piezometers placed at regular intervals along the banks of the river could be used to determine losing/gaining stretches, and where the river is gaining, water quality of the discharge should be evaluated. Conductivity monitoring in river bottom along transects may **provide information about ground-water** discharge in the central portions of the river channel. This information, coupled with the onsite piezometers, should be used to generate seasonal equipotential maps.

Geochemical evaluation of the river and ground water quality may also provide useful information about their interaction. Any differences in the major cation and anion chemistry of the river water and ground water may be identified through such tools as ternary diagrams, trilinear plots, or Stiff diagrams.

Contaminant transport modeling used in the analysis of ground-water remedial options needs to consider the vertical distribution of contaminants. For example, ammonia and uranium concentrations are higher in the coarse gravels than in the overlying medium sands in well PZIM. There appears to be a topographic high in the gravel beds at this

location. This location also is adjacent to the river back-water area in which elevated ammonia levels cause a concern for chronic aquatic toxicity. This may or may not be related to the higher concentrations in these coarse gravels, Contaminant transport in the gravel beds is not well characterized and it is not known where the ground water in the coarse gravels discharges. The available array of wells should be evaluated to determine if sufficient information car, be obtained regarding contaminant transport in the gravel beds.

The **Draft EIS** will consider evaluating ground-water remediation options for reducing metals and ammonia for both the on-site remediation option and for inclusion in any removal for the off-site disposal options. Natural mechanisms for attenuation, such as sorption and redox reactions need to be evaluated for both the fine sands and gravel beds through which contaminants are migrating. Bench scale studies that evaluate the potential for leaching from the various materials in the tailings pile should also be conducted in order to evaluate the long term mass influx to ground water in the event the pile is capped in place.

The influence of the tamarisk along the river also needs to be considered in evaluating ground-water remedial options. Ground-water modeling needs to include evapotranspiration through the tamarisk, and the water balance and contaminant transport modeling should include any uptake of metals and ammonia that may occur as the plume moves through the tamarisk area. We are aware of only a single study analyzing uptake of metals by tamarisk, so it may be difficult for DOE to quantify metal removal by the existing vegetation at the site. See "Uptake of Arsenic by Tamarisk and Eucalyptus under saline conditions", pages 485-492, R.W. Tossell, K. Binard, and M.T. Rafferty in Bioremediation and Phytoremediation of chlorinated and recalcitrant compounds; Eds. GB Wickramanayake, A.R. Gavaskar, B.C. Alleman, and V.S. Magar. Monterey, CA. May 22-25, 2000. If removal of the non-native tamarisk is proposed, the uptake of metals and ammonia of any replanted native vegetation would also need to be considered as part of the site restoration as well as the ability of native vegetation to tolerate the metal and ammonia concentrations in the ground water.

Surface Water Quality analysis

DOE should address the impacts of contamination (leachate and tailings) entering the river at the present rates and the impacts of a partial and a total (catastrophic) collapse or failure of the tailings pile resulting in large quantities of leachate and the tailings entering the Colorado river. The failure scenarios need to address the resultant impacts to the Colorado River. The scope of the EIS could include the impacts of contaminants tailings and leachates on downstream water supplies including consideration of whether the supply is for potable or agricultural uses. Have any studies (sampling and analysis) been conducted of the existing water supply intakes? Failure analyses may include the time it will take for water and contaminants to move downstream in the Colorado River, considering both the circulation and retention times in the reservoirs prior to being introduced into a water supply. Impacts to river recreational users regarding potential

exposure to the tailings material could also be considered as an element of the failure analysis.

Alternative cover design and its relation to past technical approach documents

Have there been any revisions to the Technical Approach Document (DOE Technical Approach Document - Revision II - December 1989) which DOE feels must be incorporated into a final design? Note that at the time of that Technical Approach Document Revision the final ground-water standards had not been promulgated. Chapter 8.0 Water Resources Protection identifies the general technical approaches for site characterization, how to develop the principal elements of the compliance strategy, and methods to evaluate whether the proposed remedial action will meet the EPA standards for water resource protection. Does DOE intend to use the approach in Chapter 8 or have there been revisions made to this document since the groundwater standards were finalized?

EPA's staff team

EPA has established a team of staff members to assist in this effort. Please contact these staff members, as listed below, directly for the subject matter listed or call the NEPA team leader Wes Wilson if you need additional guidance from EPA.

Name	Function	Phone	Email
Weston Wilson	EIS review lead	303/312-6562	wilson.wesnepa.pov
Richard Graham	Radiation Program	303/312-7080	graham.richardv,c epa.gov
Paul Mushovic	Cover design, transportation, tailings disposal and cost analysis	303/312-6662	musho6c. Paul @ e pa. ov
Jean Belille	Environmental Justice	303/312-6556	belille.'e~L(~epa.gov
Donna Jackson	Tribal issues	303/312-6281	jackson.doimaLepa.gov
Helen Dawson	Ground water modeling	303/312-7841	dawson.helen(c~e a
Paul Osborne	Ground water criteria for UMTRCA Title II	303/312-6125	osborne.paul@eVa.gov

Thank you for consideration of our comments. We look forward to working with DOE and the other cooperating agencies to meet the intent and purposes directed by Congress for remediation of the Moab Project Site.